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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ORAN D. TARLTON

Appeal 2008-0340
Application 09/369,134
Technology Center 3600

Decided: March 14, 2008

Before: MURRIEL E. CRAWFORD, HUBERT C. LORIN and
STEVEN D.A. McCARTHY, *Administrative Patent Judges.*

McCARTHY, *Administrative Patent Judge.*

DECISION ON APPEAL

1 STATEMENT OF THE CASE

2 The Appellant appeals under 35 U.S.C. § 134 (2002) from the final
3 rejection of claims 3, 4, 6, 10, 11, 13, 21 and 25 under 35 U.S.C. § 103(a)
4 (2002) as being unpatentable over Fyffe (U.S. Patent 1,426,724) in view of
5 Ogino (U.S. Patent 5,651,494); and the final rejection of claims 5, 7, 12, 14,

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4

122-24 and 26 under section 103(a) as being unpatentable over Fyffe in view
2of Ogino and Poe (U.S. Patent 4,563,025). Independent claim 4 is
3representative of the Appellant's claims and reads as follows:

4

5 4. A composite metal seal comprising a core of
6 relatively hard metal, and at least one annular
7 region of relatively soft metal that is integrally
8 bonded with the core of relatively hard metal and
9 that provides an annular sealing surface for
10 effecting a fluid pressure seal, wherein the annual
11 [*sic*, annular] region of relatively soft metal is
12 welded onto the core of relatively hard metal.
13

14We have jurisdiction under 35 U.S.C. § 6(b) (2002).

15 We reverse.

16 The primary issue in this appeal is whether the combined teachings of
17Fyffe and Ogino would have suggested a composite metal seal ring having
18one or more annular regions of relatively soft metal welded onto an annular
19core of relatively hard metal. Fyffe teaches collars for joining metal pipes.
20(Fyffe, ll. 9-10). Referring to Fig. 1 of the reference, each of the collars *a*
21and *b* has a threaded end which fits over an end of one of the pipes *g* and *j* as
22well as a flared end axially opposite the threaded end. An internal core *c* of
23hard metal fits into a cavity formed by the flared ends of the collars *a* and *b*.
24(Fyffe, ll. 35-38 and Fig. 1). A seating *d* of soft metal mates with the
25external surface of the core *c* and is gripped by the interior surface of the
26flared end of the collar *a*. Another seating *d* of soft metal mates with the
27external surface of the core *c* and is gripped by the interior surface of the
28flared end of the collar *b*. (*Id.*; Fyffe, ll. 53-62).

1 The core *c* appears to be ring-shaped in the sense that it is spherical
2with a cylindrical interior passageway for allowing fluid to pass between the
3pipes *g* and *j*. The two seatings *d* appear in Fig. 1 to be annular in shape.
4“The core is preferably provided with a central rib or stop *h*” which appears
5to space the two seatings with respect to a longitudinal axis of the core.
6(Fyffe, ll. 46-47).

7 Ogino teaches an apparatus for ultrasonically welding a hard metal
8piece to soft metal pieces. A first soft metal piece lies on a workbench. The
9hard metal piece lies over the soft metal piece. A layer of metal having high
10plastic fluidity covers the hard metal piece. A second soft metal piece lies
11atop the hard metal piece. An ultrasonic vibrator presses a horn tip against
12the second soft metal piece atop the hard metal piece. (Ogino, col. 2, ll. 26-
1346). The ultrasonic vibrator vibrates the horn tip laterally. As the horn tip
14vibrates, the stack of metal pieces is gripped between the horn tip and the
15workbench. (Ogino, col. 2, ll. 54-60). The lateral vibration of the horn tip
16causes the soft metal pieces to bond with the layer of metal covering the
17hard metal piece. (Ogino, col. 2, l. 66 – col. 3, l. 2).

18 The Examiner finds that:

19
20 Fyffe fails to disclose that the hard and soft metals
21 are integrally bonded together. Ogino discloses
22 integrally bonding of hard metal to soft metal by
23 welding. It would have been obvious to one
24 having ordinary skill in the art at the time the
25 invention was made to have the hard metal and
26 soft metal of Fyffe to be welding as taught by
27 Ogino to provide a bond between metals and also
28 to prevent loss of the soft metal from the hard
29 metal (column 1, lines 41-43).
30

1(Ans. 5). With respect to claims 3, 4, 6, 10, 11, 13, 21 and 25, the Appellant
2contends that:

3

4 In the present application, there is nothing in the
5 prior art of record to suggest the desirability of
6 welding the soft metal to the hard metal in the seal
7 of Fyffe. Fyffe appears to be entirely satisfactory
8 for its intended purpose of making a metal-to-
9 metal fluid pressure seal between two hubs.
10 Moreover, there is nothing in Ogino suggesting
11 that his ultrasonic welding should be used for
12 fabricating a pressure seal. Furthermore, it appears
13 that Ogino's apparatus of FIG. 2 would need to be
14 modified somehow for welding of the hard and
15 soft metal in the seal of Fyffe, due to the fact that
16 Ogino's ultrasonic welding method drives the hard
17 metal into the soft metal, as shown in FIG. 3A and
18 described in column 2 line 66 to column 3 line 4.

19

20(Br. 11). The Examiner responds that "[t]he argument that Ogino fails in
21'suggesting that his ultrasonic welding should be used for fabricating a
22pressure seal' is not persuasive since Ogino is used to teach only that two
23metals can be welded together to provide a bond between the two metals."

24(Ans. 8).

25 We agree with the Appellant that the Examiner has not articulated a
26sufficient reason why one of ordinary skill in the art would have modified
27Fyffe's structure in view of the teachings of Fyffe and Ogino. Each of
28claims 3, 4 and 6 recites that the annular region of soft metal is welded onto
29the core of relatively hard metal. Each of claims 10, 11, 13, 21 and 25
30recites that each of the first and second annular regions of soft metal is
31welded onto the annular core of relatively hard metal. For the following

1 reasons, one of ordinary skill in the art would not have looked to Ogino's
2 ultrasonic welding process to integrally bond parts of a fluid pressure sealing
3 ring.

4 There appear to be several problems with using Ogino's ultrasonic
5 welding process to weld hard and soft metals in a fluid pressure sealing
6 ring. One problem is that Ogino's process is designed for welding hard and
7 soft metals having geometries significantly different from the cores of
8 relatively hard metal and the annular regions of relatively soft metal recited
9 in the claims. Another problem is that close dimensional tolerances appear
10 to be required to fabricate metal-to-metal contact seals capable of
11 withstanding high fluid pressures. As the Appellant points out, one of
12 ordinary skill in the art could not have predicted that Ogino's welding
13 process would produce a usable seal because the process may suffer
14 dimension control problems due to the process driving the core of relatively
15 hard metal into the region of relatively soft metal. (*See* Ogino, col. 2, l. 66 –
16 col. 3, l. 9).

17 Therefore, we conclude that one of ordinary skill in the art would not
18 have been led to modify Fyffe's structure to include an annular region of soft
19 metal welded onto a core of relatively hard metal as recited in claims 3, 4
20 and 6 or first and second annular regions of soft metal is welded onto the
21 core of relatively hard metal as recited in claims 10, 11, 13, 21 and 25 given
22 Ogino's welding process. On the record before us, the Appellant has shown
23 that the Examiner erred in rejecting claims 3, 4, 6, 10, 11 and 13.

24 With respect to claims 5, 7, 12, 14, 22-24 and 26, the Examiner finds
25 that Poe teaches grooves in the surface of a sealing ring "to maintain the
26 integrity of all radial compression to the ring and also to enable the ring to

1remain within elastic limit of the seal ring material.” (Ans. 6). The
2Examiner additionally finds that Poe teaches “distribution of stress in a
3sealed joint by the use of grooves and lands” on the surface of the seal.
4(Ans. 9). Neither of these teachings overcomes our finding that one of
5ordinary skill in the art would not have been led to modify Fyffe’s structure
6given Ogino’s welding process to arrive at the claimed composite metal seal.
7On the record before us, the Appellant has shown that the Examiner erred in
8rejecting claims 5, 7, 12, 14, 22-24 and 26.

9

10 CONCLUSION OF LAW

11 On the record before us, the Appellant has shown that the combined
12teachings of Fyffe and Ogino would not have provided one of ordinary skill
13in the art with reason to modify Fyffe’s structure to include one or more
14annular regions of soft metal welded onto a core of relatively hard metal.
15Therefore, the Appellant has shown that the Examiner erred in rejecting
16claims 3, 4, 6, 10, 11, 13, 21 and 25 under section 103(a) as having been
17obvious from Fyffe in view of Ogino. The Appellant also has shown that
18the Examiner erred in rejecting claims 5, 7, 12, 14, 22-24 and 26 under
19section 103(a) as having been obvious from Fyffe in view of Ogino and Poe.

20

21 DECISION

22 We reverse the Examiner’s rejection of claims 3-7, 10-14 and 21-26.

23

24 REVERSED

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